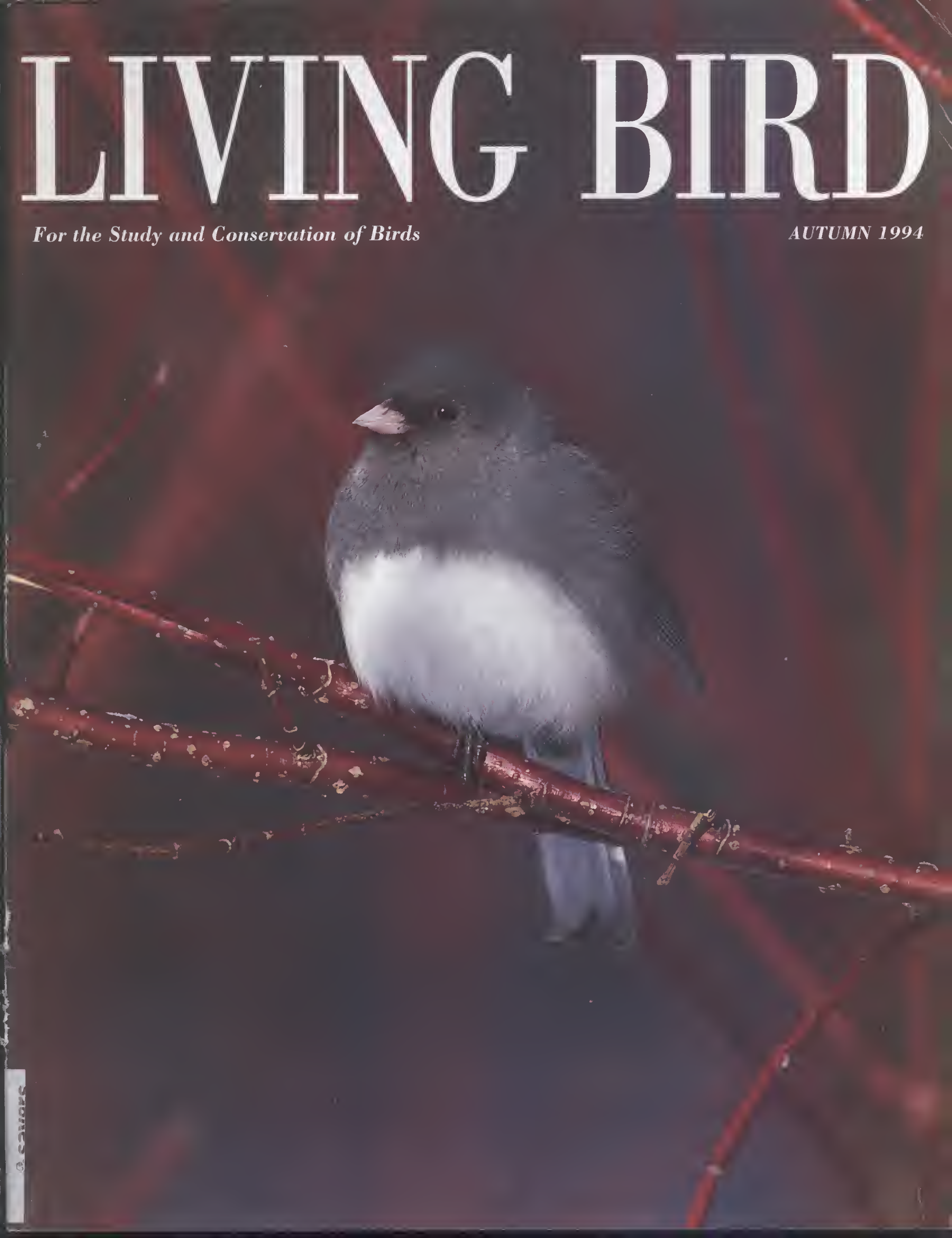
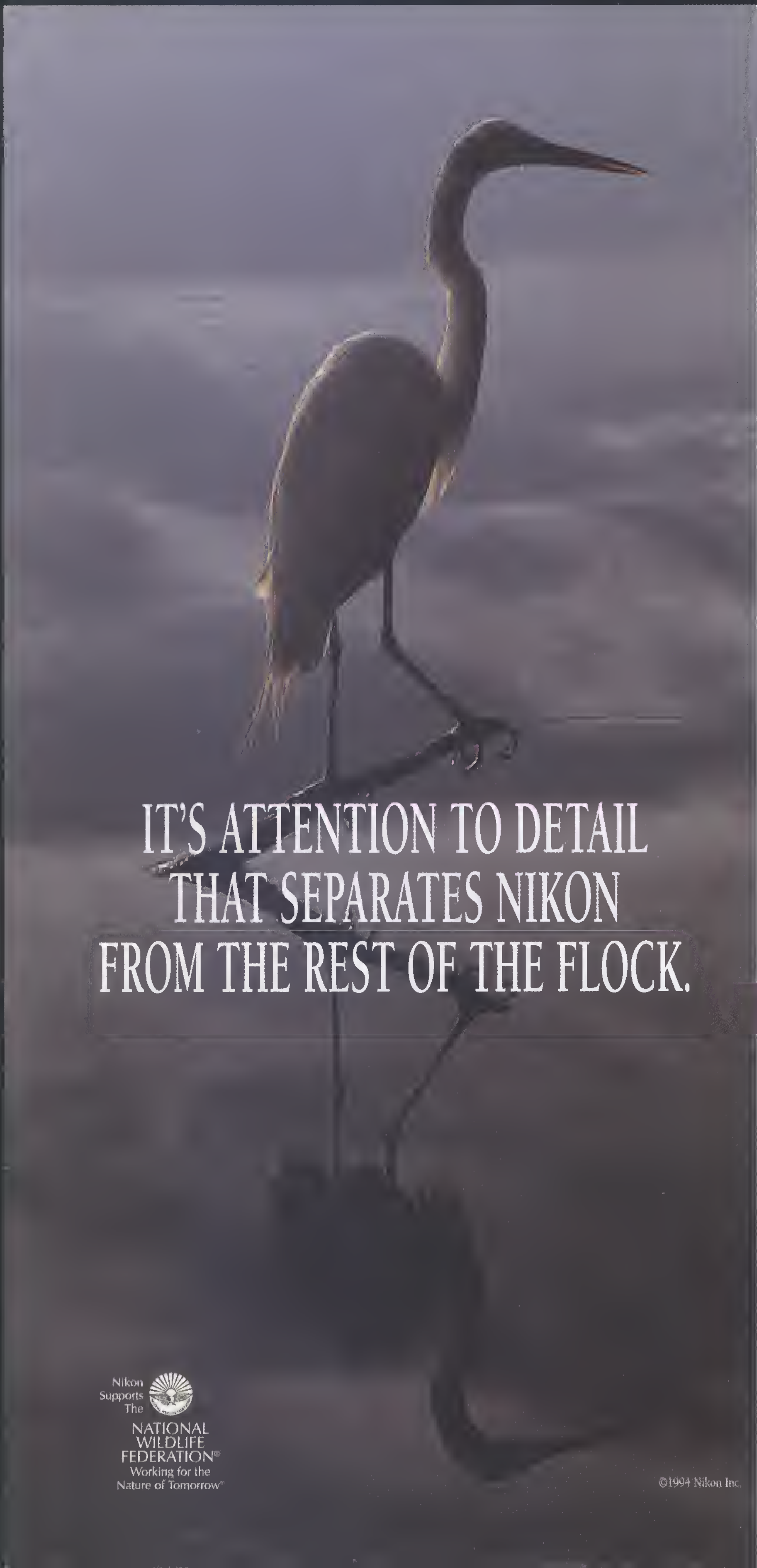
LIVING BIRD

For the Study and Conservation of Birds

AUTUMN 1994

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LIVING BIRD

AUTUMN 1994 VOLUME 13 NUMBER 4

Greetings from Sapsucker Woods

The spirit of famed artist Louis Agassiz Fuertes looms large over the Lab of Ornithology. Walk down any hallway in the building and you'll likely encounter one or more of his magnificent paintings—a white Gyrfalcon perched regally on a rocky outcropping; an Argus Pheasant performing its fabulous courtship display; a Golden Eagle hotly pursuing a fleeing White-tailed Ptarmigan.

Or step into the Lab's Fuertes Room, where the Monday Night Seminars are held. This large, richly adorned room—with dark-paneled walls of Java teak, encircled above by a vivid collection of 24 Fuertes bird paintings—was originally a private study in a 66-room Tudor mansion owned by Frederick Foster Brewster. Fuertes was commissioned by Brewster more than 80 years ago to create the paintings, which depict a variety of bird species and habitats. Years later, Brewster bequeathed the room's contents to the Cornell Lab of Ornithology. The wood panels, glass-fronted bookcases, and paintings were painstakingly removed and later reassembled here in 1968.

In this issue we present a small portfolio of black-and-white gouache paintings from Fuertes's first commission as an artist nearly a century ago. Read how these priceless early works nearly ended up on the rubbish heap in "One Man's Treasure," an article by *Living Bird* managing editor Cynthia Berger that accompanies the illustrations.

We invite members and friends of the Lab to visit Ithaca and see our collection of Fuertes's art firsthand. Though Fuertes passed away decades before the Lab building was erected at Sapsucker Woods, the Fuertes Room and all the beautiful paintings that adorn the walls of the Lab form a lasting monument to a great artist who once lived and worked here in Ithaca.

Tim Gallagher
Editor-in-Chief

Cover: The subtle beauty of this Dark-eyed Junco is enhanced by the bare, red dogwood branches in the background. These fascinating birds are the most widespread backyard feeder visitors across North America, according to data from Project FeederWatch. Read how you can participate in this worthwhile program on page 34. Photograph by Marie Read.

Right: This stunning portrait of an Andean Cock-of-the-Rock pair is just one of hundreds of color illustrations that artist Guy Tudor is completing for a new series on South American birdlife. Story on page 20.

Back Cover: An Ostrich's eye view? Photographer Rita Summers speculates that this Ostrich was searching for insects on its stomach when she took this bizarre picture. Story on page 14.

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Letters

TIM GALLAGHER

CONFESSIONS OF A PIGEON WATCHER

I was very impressed with the Summer 1994 issue of *Living Bird*. I especially enjoyed Alexander Skutch's fascinating piece, "The Unappreciated Pigeon." As a child I raised and trained homing pigeons, and since then I've always had a special place in my heart for these common birds—even the feral variety that so many city dwellers despise.

Since I became a birder a decade or so ago I learned to hide my appreciation of pigeons and snicker along with the birding crowd when "Rock Dove" sightings were announced. Now, thanks to your article, I feel I can come out of the closet and say, "Yes, I like pigeons."

Robert Bartlett
Fallbrook, California

BIG DAY WOMEN

In her letter in the Spring 1994 issue of *Living Bird*, Ellen Short says, "What was probably the first all-women's team" participated in the 1992 World Series of Birding.

Actually, the first all-women's team entered the Biggest Day contest in 1988, when four Gulf Coastians ventured northward into terra incognita to test their skills.

Wearing T-shirts designating themselves the "Mississippi Mudders," the women often were asked if they were the mothers of the Mississippi team, to which they would reply, I hope with appropriate hauteur, "No, we *are* the team."

Organized and led by Judith Toups of Gulfport, the four placed third in the "Out-of-Region" competition and fifteenth overall. A charming account of their experience appeared in the October 1988 issue of *Birder's World*.

Raymond A. Russell
Kiln, Mississippi

AW, SHUCKS

I find *Living Bird* a most delightful and informative magazine and especially enjoy the color pictures, truly worthy of framing. Congratulations on such an outstanding magazine.

Theresa Wicklin
Maitland, Florida

SUCH BAD TASTE

How easily we forget that not all who enjoy birds do so with binoculars. Stanley Temple's delightful article, "Foul Fowl," (Spring 1994) reminds us that the best birders use all their senses.

The recent trial of a hunter accused of killing and eating a Bald Eagle demonstrates the value of taste. Aquitted after explaining that he was lost and starving, he was asked by the judge how the eagle tasted. "Well," he replied, "not too bad really. Somewhat between a Peregrine Falcon and a Whooping Crane."

Here in the Great Basin, I've marvelled that Black-billed Magpies can meander noisily in flashy black-and-white and still avoid being exterminated by Prairie Falcons and Sharp-shinned Hawks. Could it be that magpies taste bad, too? Not brave enough to sample one myself, I'll anxiously await the upcoming publication, Peterson's *Palate Guide to Western Birds*. In the meantime, I'll try to bird with all senses alert. Is anyone working on a birders' scratch and sniff?

Kevin J. Colver
Elk Ridge, Utah

We welcome letters from readers.
Address letters to: The Editors, *Living Bird*, 159 Sapsucker Woods Road, Ithaca, New York 14850.

BirdNews

Crested Tit by V. Hasselblad (VIREO)

FLEDGING IN FOREST FRAGMENTS

Here in North America, conservationists tend to trumpet the plight of forest-breeding, migratory songbirds: When expanses of forest get carved up by development, migrants sometimes don't have much luck rearing young.

But forest fragmentation isn't a problem just for migrants—it also affects the birds that live in forests year-round. According to University of Belgium researchers Luc Lens and André Dhondt (now director of the Lab's Bird Population Studies program), young Crested Tits fledge just fine in fragmented forests, but may have trouble claiming a high-quality winter home. (*Ibis* vol. 136: 147-152; 1994).

The researchers compared tits nesting in a large, pine forest to other tits nesting in forest fragments. They found that birds in fragments waited longer than birds in continuous forests before starting a second clutch. Nestlings reared in fragments also weighed less than those in continuous forests, perhaps because parents couldn't find enough insect food for their offspring.

Despite the weight difference, birds in both habitats fledged in about the same amount of time. But after fledging, a difference emerged in the timing of dispersal. Young Crested Tits leave their parents' territory at the end of the summer, traveling two kilometers or more to join a winter flock. Birds reared in intact forests left home about a week earlier than birds reared in fragments. The early birds joined winter flocks in continuous forests, which are high-quality habitat; birds reared in fragments were more likely to end up wintering in low-quality fragments. According to Lens and Dhondt, the better a bird's winter territory, the better its chances of surviving the winter.

VOCAL VARIETY

Some species of birds drone a single, monotonous song; other species have the repertoire of an operatic diva. Among these star performers, the males of some species—but not all—enrich their repertoires by imitating the individualized songs of their conspecific neighbors. Why the vocal variety? Recent research by Nature Conservancy biologist David Ewert and Lab administrative board member Donald Kroodsma provides some insight (*Condor* vol. 96: 190-196; 1994).

The two examined recordings of Rufous-sided Towhees to see how many different songs each individual sang. Wait a minute—how can a study of a single species answer a question about differences between species? It works like this: Ewert and Kroodsma compared towhees from different parts of the United States (New York versus Florida). They reasoned that this experimental design would show what ecological situations led to differences in vocal behaviors.

As it turned out, the Florida birds averaged eight different songs; New York birds averaged only about half as many. Florida towhees also imitated their neighbors' songs much more often than the northern birds.

Why the difference between the two towhee populations? The New York birds migrate; the Florida birds are year-round residents. Birds in the Sunshine State may adopt their neighbors' songs simply because, over a lifetime, they spend more time hearing the same songs. Over time, the resident towhees may even have evolved a superior ability to imitate their neighbors and learn larger repertoires.

California Gnatcatcher by Herbert Clarke

GNATCATCHER RELISTED

Conservationists interested in the status of the California Gnatcatcher are swiveling their heads faster than spectators at a pro tennis match as the tiny gray bird bounces on and off—and on—the endangered species list.

Its numbers reduced to about 2,000 breeding pairs, the gnatcatcher was officially declared a threatened subspecies in March 1993. This past May, however, a federal judge took the bird off the list. Why? The court ruled that the U.S. Fish and Wildlife Service (USFWS) didn't follow the proper listing procedures.

But procedures aside, there's no real question of the bird's threatened status—scientists estimate that up to 90 percent of its habitat has been lost to development. So on June 16 the gnatcatcher was temporarily reinstated as a threatened species. The ruling means protection not only for the 6-gram songbird, but for its unique coastal sage scrub habitat.

The reinstatement opened a 100-day period in which the USFWS will accept further public comments on the listing. Stay tuned to see which way the ball bounces.

COMPILED BY CYNTHIA BERGER

Profile

BEGUILED BY BIRDS

by James L. Hayward

For author, artist, and scientist Paul Johnsgard, a lifetime passion has fueled a prolific career

“I spent the first thirty years of my life learning to be a scientist, and the next twenty-five years of my life trying to become a humanist and an artist.” Paul Johnsgard immerses himself in several worlds, but for the eclectic teacher, writer, artist, and scientist, these worlds merge in a burst of feathered movement, color, and shape. Johnsgard is beguiled by birds.

As a professor of biological sciences at the University of Nebraska with full teaching responsibilities, Johnsgard has managed to write at least one or two books on birds each year. In 1986 I asked him if he thought he'd ever equal the prodigious output of Arthur Cleveland Bent, an earlier bird biographer. “Oh,” he replied nonchalantly, “I passed up Bent some time ago.” Indeed, Johnsgard is the most prolific author in the history of ornithology. His volumes dominate the ornithological collections of most libraries.

Johnsgard's passion for birds developed when he was a boy growing up in North Dakota. His family was of modest means, but his mother encouraged her son to appreciate the natural world. He collected rocks, minerals, and plants, tended a wildflower garden, and learned to identify birds using his mother's set of Reed bird guides. He also recalls that his first-grade teacher had a mounted, male Red-winged Blackbird in a glass case. “I can remember that as if it were yesterday,” he says. “I think that was an important aspect of wanting to see birds up close.”

When Johnsgard was eight, his family moved to Wahpeton, south of Fargo, a town big enough for a public library. Like most boys his age, young Paul liked adventure stories, but he had a special fondness for natural history books, particularly those on mammals and birds.

“I was very shy, very self-contained,” Johnsgard remembers. “My idea of having fun was going off in the woods and looking for wildflowers or watching birds. I was quite content just being by myself. I was no good at intramural sports so I spent a lot of time in the library, a lot of time drawing, a lot of time reading.” He also took up photography and began chronicling his wildlife pursuits on black-and-white film with a 35mm Exakta camera.

A distant cousin, Bud Morgan, introduced Paul to the more professional aspects of biology. Morgan, a game warden, began taking the boy on spring duck counts and helped him identify the different species. A few years later, when Morgan became director of the North Dakota Game and Parks Department, he published one of Paul's photographs of pintails on the back cover of *North Dakota Outdoors.* This was Johnsgard's first “publication.”

After finishing high school and two years of junior college in Wahpeton, Johnsgard enrolled as a zoology major at North Dakota State University with the intention of entering wildlife management. One of his professors, Frank Cassel, a Cornell University graduate, saw potential in the eager student and encouraged him to consider a career in ornithology. Johnsgard was surprised but delighted to learn that a person could study birds for a living. He decided he would specialize in waterfowl biology.

Johnsgard chose to do his master's degree at Washington State University. For his thesis he examined how changes in water levels brought about by the recently constructed O'Sullivan Dam affected bird populations in the Potholes region of central Washington. He also collected data on sex ratios and courtship rituals among waterfowl of the region. Johnsgard reported his observations in an article for the journal *Condor* in 1955, illustrating the piece with his own drawings, a practice that was to become standard in later years.

The *Condor* article caught the attention of Cornell University's Charles Sibley, who at the time was studying the evolution of duck behavior. “It was an interesting paper,” wrote the Cornell professor to Johnsgard, “but you obviously are not aware of the work of Konrad Lorenz, who published a very extensive paper on courtship behavior in the dabbling ducks.” After chastising the embarrassed young scientist for the oversight, Sibley invited Johnsgard to consider doing a Ph.D. under him at Cornell.

Johnsgard was elated with the prospect. Cornell enjoyed a distinguished

A selection of books by Paul Johnsgard

Dragons & Unicorns: A Natural History. New York: St. Martin's Press; 1982.

The Hummingbirds of North America. Washington, D.C.: Smithsonian Institution Press; 1983.

The Cranes of the World. Bloomington, Indiana: Indiana University Press; 1983.

Diving Birds of North America. Lincoln, Nebraska: University of Nebraska Press; 1987.

North American Owls. Oxford: Oxford University Press; 1988

Hawks, Eagles and Falcons of North America. Washington, D.C.: Smithsonian Institution Press; 1990.

Crane Music. Washington, D.C.: Smithsonian Institution Press; 1991.

Bustards, Hemipodes and Sandgrouse: Birds of Dry Places. Oxford: Oxford University Press; 1991.

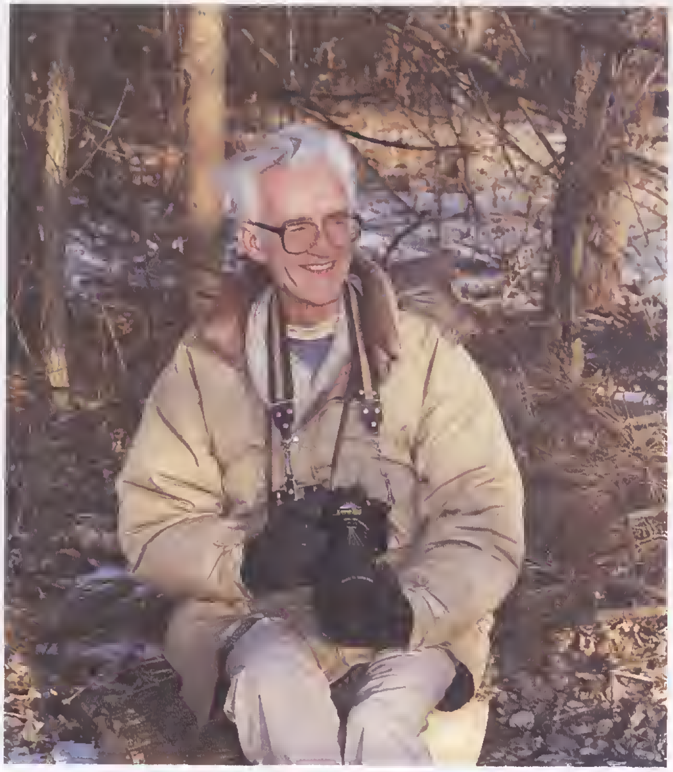
Arena Birds: Sexual Selection and Behavior. Washington, D.C.: Smithsonian Institution Press; 1994.

reputation, and many of North America's prominent bird specialists had worked there—Arthur Allen, Peter Kellogg, Albert Brand, and Frank Chapman. Moreover, Sibley's work on the origins of avian diversity was attracting serious attention from the biological community. With Sibley's endorsement, Johnsgard was accepted to Cornell.

Under Sibley's mentorship, Johnsgard tackled a problem involving the origins of six closely related ducks—the Mallard, Black Duck, Florida Duck, Mottled Duck, Mexican Duck, and New Mexican Duck. After an impressive piece of ornithological detective work, Johnsgard concluded that the six varieties represent only two closely related species, the Mallard and the Black Duck. The other four types are merely subspecies of the Mallard.

Upon completing his Ph.D., Johnsgard headed to England for a two-year post-doctoral fellowship at the Wildfowl Trust in Gloucestershire, England. Peter Scott, founder of the trust, had assembled most of the 145 living species of ducks, geese, and swans at the facility. Johnsgard was in his element. He analyzed the behavior of 133 species of these birds, a gargantuan project that provided data for a bevy of technical papers. Most importantly, this experience culminated in what has since become a classic reference work: Johnsgard's *Handbook of Waterfowl Behavior,* published by Cornell University Press in 1965.

"There is no doubt that Professor Johnsgard's work will be widely acclaimed as a fine achievement," reported the *New York Review of Books.* "[It] should be in the library of everyone with an interest in keeping waterfowl. Taxonomists in our great museums cannot afford to ignore it." This unexpected but unequivocal endorsement by a leading literary magazine catapulted Johnsgard from the obscurity of field biology to the world of editors, publishing awards, and book signings. Johnsgard began to view himself as a writer as much as a biologist.



A photograph of pintails was Paul Johnsgard's first "publication." Thirty-three books later, he's still documenting bird behavior.

During his last year in England, Johnsgard received a letter from Sibley suggesting that he apply for a teaching job at the University of Nebraska, where a position had opened up in the zoology department. Johnsgard had never been to Nebraska, though he knew it was a good state for waterfowl. He applied for and got the job without so much as an interview and has been there ever since.

Johnsgard's years at the University of Nebraska have been good to him. In the late 1960s he earned the university's Distinguished Teaching Award. This was followed by a Regents Professorship and the Outstanding Research and Creative Activity Award. Other honors and awards include two National Science Foundation grants, a Guggenheim Foundation Fellowship, the Fulbright-Hays Award, the Mari Sandoz Literature Award, and the Loren Eiseley Award. Most importantly, Johnsgard's professorship has served as a support base for production of his 33 books, one for every year he's been on the faculty.

Johnsgard's best prose reflects the influence of Henry David Thoreau, Aldo Leopold, and Annie Dillard. For example, reading of a wounded Snow Goose downed by buckshot in his fictional work, *Song of the North Wind,* we feel Johnsgard's deep passion, sense of mystery, and appreciation of life:

> *Lying helplessly on her back, feet still uselessly paddling the air, she cannot see that the bloody wound on her abdomen has stained her entire underparts with red. Drawing on her last remaining strength, she raises her head and through dimming eyes gains a final glimpse of white-headed father passing above. Then her feet slowly cease their paddling, her body gives a final convulsive quiver, and she is dead. Overhead, white feathers torn from her body by the fusillade of gunfire still drift in the wind, eventually settling and floating as lightly as phalaropes on the surface of the lake.*

In 1984 Johnsgard found himself wounded, downed by a near-fatal heart attack in his Lincoln office. The lean, active nonsmoker seemed an unlikely candidate for heart disease. But lying in a hospital bed soon after the attack, he realized that eight books were probably too many to work on at one time. Upon returning home he temporarily put aside his demons and carved the life-sized Trumpeter Swan that now hangs from his office ceiling.

Johnsgard recovered with remarkable speed and a decade later continues to exude boundless energy. I called him recently to find out about his latest projects. "My book on arena behavior just came out," he said. "Another book concerning the natural history of the Nebraska sandhills should be out in a few months. It's in the form of narrative poetry, so it's been harder to write." Other books in preparation deal with the biology of stiff-tailed ducks and a world review of brood parasitism. He plans to "retire" in 1996. Maybe after that he'll travel to develop new ideas for more books.

"I wouldn't change my life in any way," says Johnsgard. ■

James Hayward teaches biology at Andrews University in Berrien Springs, Michigan.

Spotlight

HELPING THE HOMELESS

by David Wilcove

The Guam Kingfisher has found shelter at the zoo. But can it ever go home?

I was very pleased with my first sighting of a Guam Kingfisher—an all-but-extinct subspecies of the Micronesian Kingfisher. The bird was perched on a sapling six feet above the ground. Even without binoculars I could see its rusty face and underparts, its sky-blue back and wings, and the dapper black stripe curving around its nape. For no logical reason, I always expect endangered birds to behave differently—perhaps show a bit of anxiety about their precarious existence—but of course they don't.

This particular Guam Kingfisher, at the time one of only 29 left on Earth, simply sat on its branch and looked around. It didn't seem to mind the hundreds of people milling around, yelling and laughing, pushing and shoving. But that's life in the Bronx Zoo, I suppose. From the kingfisher's perspective, living in a cage was a lot safer than living on the Pacific island of Guam. Ten years later, that's still the case, which makes the Guam Kingfisher one of an increasing number of homeless birds.

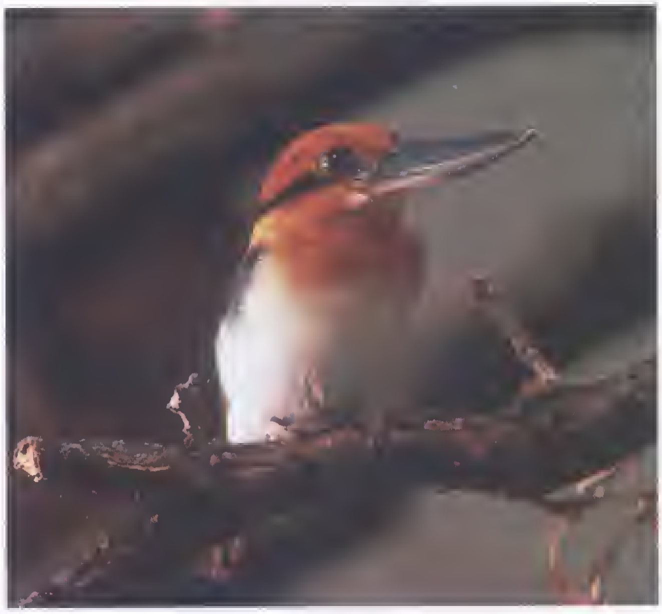
How the kingfisher lost its home is a familiar story—with a twist. Anyone who has watched a feisty starling evict a bluebird or woodpecker from a nest site knows that most introduced species do far more harm than good. But who could have imagined the ecological hell that would befall the birds of Guam when brown tree snakes from New Guinea were accidentally released there?

Finding themselves on a little island with no natural predators, parasites, or diseases, the snakes exploded in numbers, reaching densities of up to 30,000 per square mile. They slithered into houses, sneaked up toilet drain pipes, attacked children and pets, and caused power outages by crawling into the electrical transformers atop utility poles. And they ate birds. Lots of birds. Within the space of a few decades, the snakes ate to extinction virtually every native forest bird on Guam.

Two birds that narrowly escaped were the Guam Rail and the Guam Kingfisher. A few decades ago, both species could be found throughout the island, but by the early 1970s they had disappeared from southern Guam, victims of a mushrooming snake population. A survey conducted in 1981 estimated that 2,300 rails and 3,023 kingfishers remained on the northernmost part of the island. But the snakes were unstoppable, and within three years both bird species were down to a handful of individuals. Between 1983 and the beginning of 1986 biologists staged a Dunkirk-like rescue, bringing 29 kingfishers and 21 rails into captivity. Shortly thereafter, snakes consumed the last wild rails and kingfishers. The future of both species now lay in the hands of a few zoos charged with the awesome responsibility of perpetuating these birds.

What happened next is a textbook example of the ups and downs of captive propagation. The rails took splendidly to life in captivity. Some began breeding when they were only five months old. In at least one case a pair laid a second clutch of eggs while still feeding three-week-old chicks. Today, approximately 180 of the rails live in captivity.

The kingfishers have been a more difficult case. The captive population grew to 62 birds by August 1990 but suffered major setbacks in 1991 and 1992 when few of the pairs bred, more than a dozen adults died, and half the chicks perished shortly after hatching. The population dropped to 48 individuals. It has since inched up to 54 birds—a long, long way from the U. S. Fish and Wildlife Service (USFWS) goal of 200 to 250 individuals. In a 1993 report, the American Zoo and Aquarium Association's Species Survival Plan coordinator somberly concluded, "[We] have seen great excitement and optimism for the success of the program turn to extreme concern for the future of the species."



MIKE GREER/CHICAGO ZOOLOGICAL SOCIETY

Many captive breeding programs face the Guam Kingfisher's dilemma: If no wild habitat remains, where do we put these birds?

What went wrong? There is no single problem bedeviling the Guam Kingfisher program. It has suffered from the setbacks and mistakes that befall even the best efforts at captive propagation of rare species (and the Guam program has been, on the whole, a very good effort). Because most zoos have limited space, the birds are distributed among many institutions. Unfortunately, that means that most zoos have only a pair or two to work with, providing few opportunities to mix and match individuals to find compatible partners. Shipping the kingfishers between zoos stressed the birds and boosted their death rates. Along the way, kingfishers in several zoos contracted avian tuberculosis, so strict measures had to be developed to prevent its spread. And in captivity, the birds have proved to be less-than-ideal parents. Some have taken to eating their newborn offspring, an especially nasty habit that may have arisen because zoos were feeding newborn mice to the adult birds. A hairless, pink mouse doesn't look all that different from a featherless, pink kingfisher chick.

One hopes these obstacles can be surmounted, but even if they are, a larger problem looms: Where do we put the kingfishers? For the immediate future, Guam remains an unacceptable release site. The snakes have resisted all efforts to find a chemical or biological control agent. Recently scientists from the National Biological Survey and the Ohio Cooperative Fish and Wildlife Research Unit succeeded in creating two snake-free zones totaling approximately five acres on Guam. But to do this, they had to erect over 2,400 feet of fencing and spend weeks eradicating the snakes within the enclosures—an expensive and time-consuming procedure.

Scientists might consider releasing the birds on the snake-free island of Rota, 30 miles north of Guam. But Rota is inhabited by the closely related Collared Kingfisher. Although the two birds might be able to coexist, scientists would prefer a release site without another kingfisher species. And even then we would be committing the same deed that got us into this mess in the first place: releasing a species on an island where it does not naturally occur. For the time being, the Guam Kingfisher must remain a refugee behind bars.

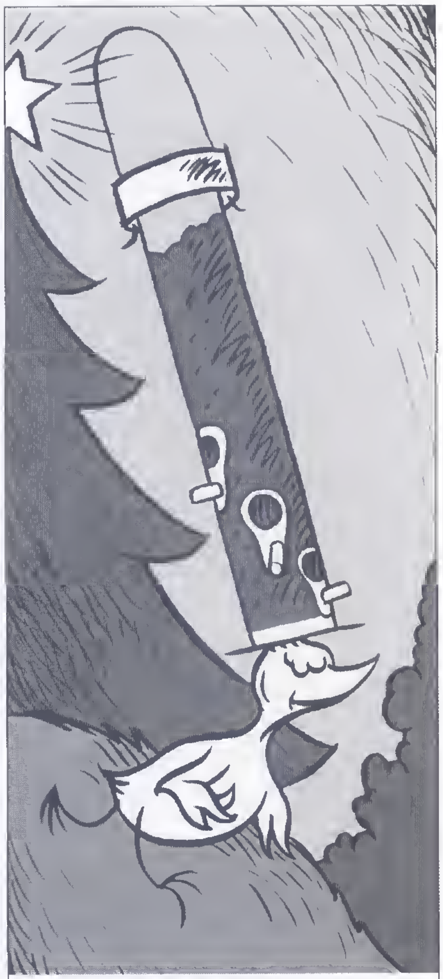
Even the fecund rails have proven to be something of a headache. They are incredibly aggressive and difficult to mix with other birds. Alone in a cage, they make an unspectacular exhibit (no surprise here—they *are* rails), so for a zoo to keep more than a pair or two entails a significant sacrifice of space and money. A few years ago, the USFWS tried to establish a population of Guam Rails on Rota, which has no indigenous rails. Unfortunately, the attempt failed when many of the rails were struck by cars while walking along a road near the release site. The USFWS plans to try again, and zoo curators no doubt have their fingers crossed, lest they be stuck forever with the feisty birds.

Although the circumstances surrounding the Guam birds are unique, their predicament is not. Both the San Diego and Los Angeles zoos, for example, have been fabulously successful in raising California Condors. But recent attempts to re-establish them in the wild have not gone smoothly. Some birds have collided with power lines—a not-so-subtle reminder that crowded Southern California is no longer optimal habitat for condors. The USFWS can breed Masked Bobwhites (an endangered subspecies of the Northern Bobwhite) by the thousands. But until recently it had nowhere to put them—their arid grassland habitat in Arizona had been destroyed by cattle. The 1985 purchase of a magnificent remnant grassland, now called the Buenos Aires National Wildlife Refuge, may solve the habitat problem, but the USFWS must still find a way to turn generations of captive bobwhites into wild birds.

Do these examples prove that captive breeding is a wasteful expenditure of time and money? Absolutely not—for without the good work of the zoos, there might not be any Guam Rails, Guam Kingfishers, California Condors, or Masked Bobwhites to fuss over. Captive propagation can be immensely valuable, but it is never a substitute for protecting natural habitats and wild populations. A Guam Kingfisher in a cage is better than no kingfisher at all. But it's a far cry from a wild bird perched on the branch of an old fig tree, on the lookout for a tasty gecko, living in a snake-free forest. ■

Further Reading

Mark Jaffe. *And No Birds Sing: The Story of an Ecological Disaster in a Tropical Paradise.* New York: Simon and Schuster; 1994.



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One Man's Treasure

by Cynthia Berger

The remarkable story of an art collection that was almost thrown away

If you've ever rescued a curbside treasure from an approaching trash truck, you'll appreciate this story. About a century ago, a young artist just beginning his career completed 108 illustrations for a book called *Citizen Bird.* Several years later the attractive gouache paintings were filed away in the basement of the publishing house, where they lay untouched for decades. Nothing in the files indicated the value of the paintings, so when the company moved to a new building they were earmarked for disposal.

You know what happened next. An employee saw the paintings, liked them, and asked if he could have some. Permission was granted; he took 36.

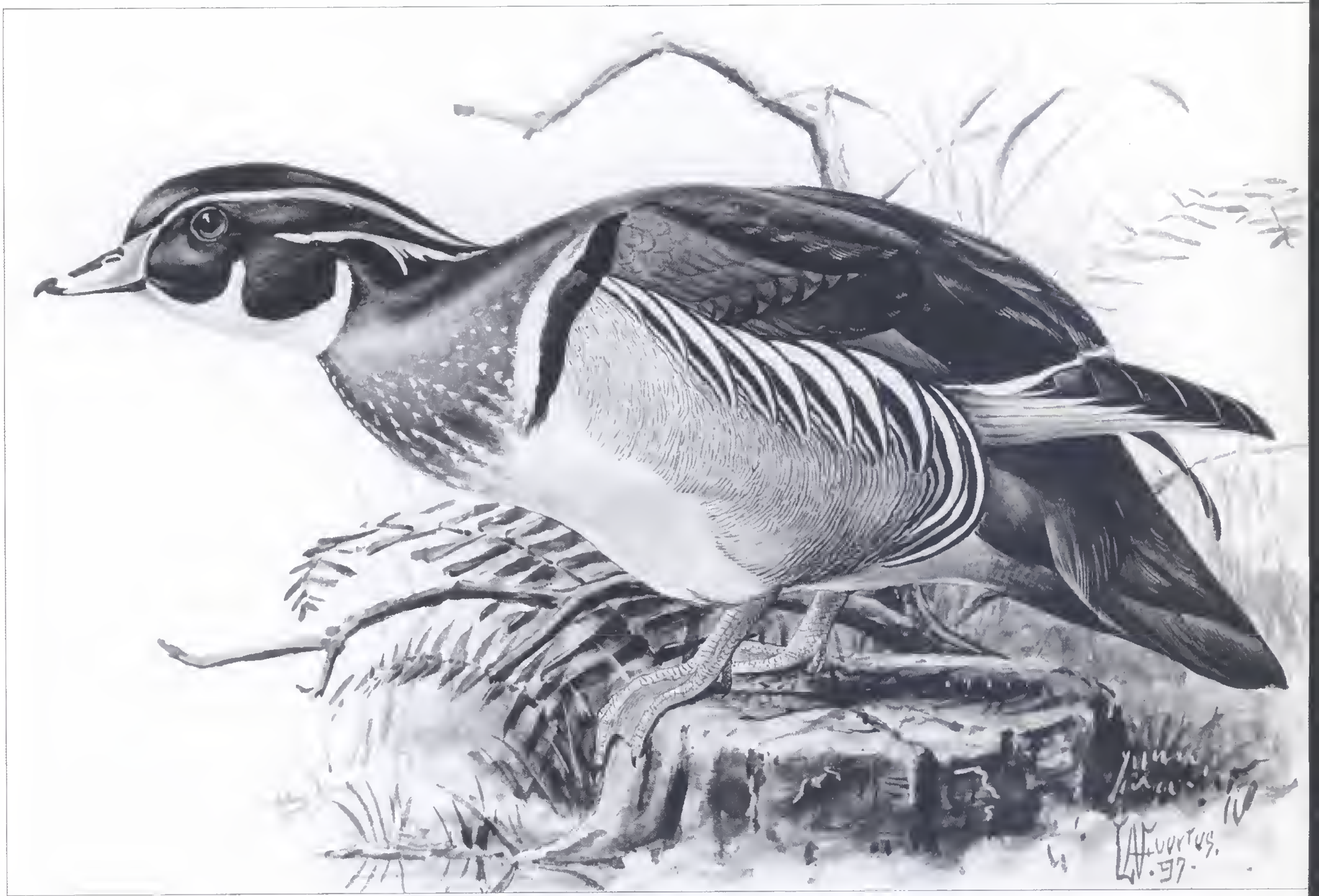
Years later, a few of the pictures, now framed, made a housewarming gift for his daughter and son-in-law, who were both avid bird watchers. The two cherished the pictures without attaching any special importance to the name of the artist . . . until one day the son-in-law happened to read a magazine article about the famed bird artist Louis Agassiz Fuertes. He suddenly realized that Fuertes was the same artist who had painted the illustrations that hung on his walls.

He contacted the Cornell Lab of Ornithology, which houses a major collection of Fuertes's art. Happy ending: the 36 black-and-white paintings are now on exhibit in the Cornell Lab of Ornithology's Stuart Observatory, generously loaned to the Lab by their owner.

A lucky rescue from oblivion isn't the only thing that distinguishes these charming illustrations. They were also the first major commission for the young artist; in effect, they launched his career. Fuertes painted them when he was only 22 and a senior at Cornell University.

A bit of serendipity brought the young artist this important commission. Fuertes was fascinated by birds and from a very young age devoted much of his time to studying and drawing them. His father, a Cornell professor, disapproved of this interest, saying it could never produce a comfortable income.

One fateful day a fellow Cornell Glee Club member offered to introduce



Even in his earliest works Fuertes showed an exceptional eye for the features that cinch an identification: a bird's shape, feather pattern, and typical posture. Thus the species depicted in Citizen Bird *are unmistakable, even though they are executed in black-and-white rather than the lifelike colors of modern field guides. Above, "Wood Duck"; far left, "Tree Swallow."*

Fuertes to his uncle, who was "crazy about birds." The uncle turned out to be Elliot Coues, the foremost ornithologist in North America at that time. To their first meeting Fuertes brought some of his best paintings, and Coues detected genius in the work.

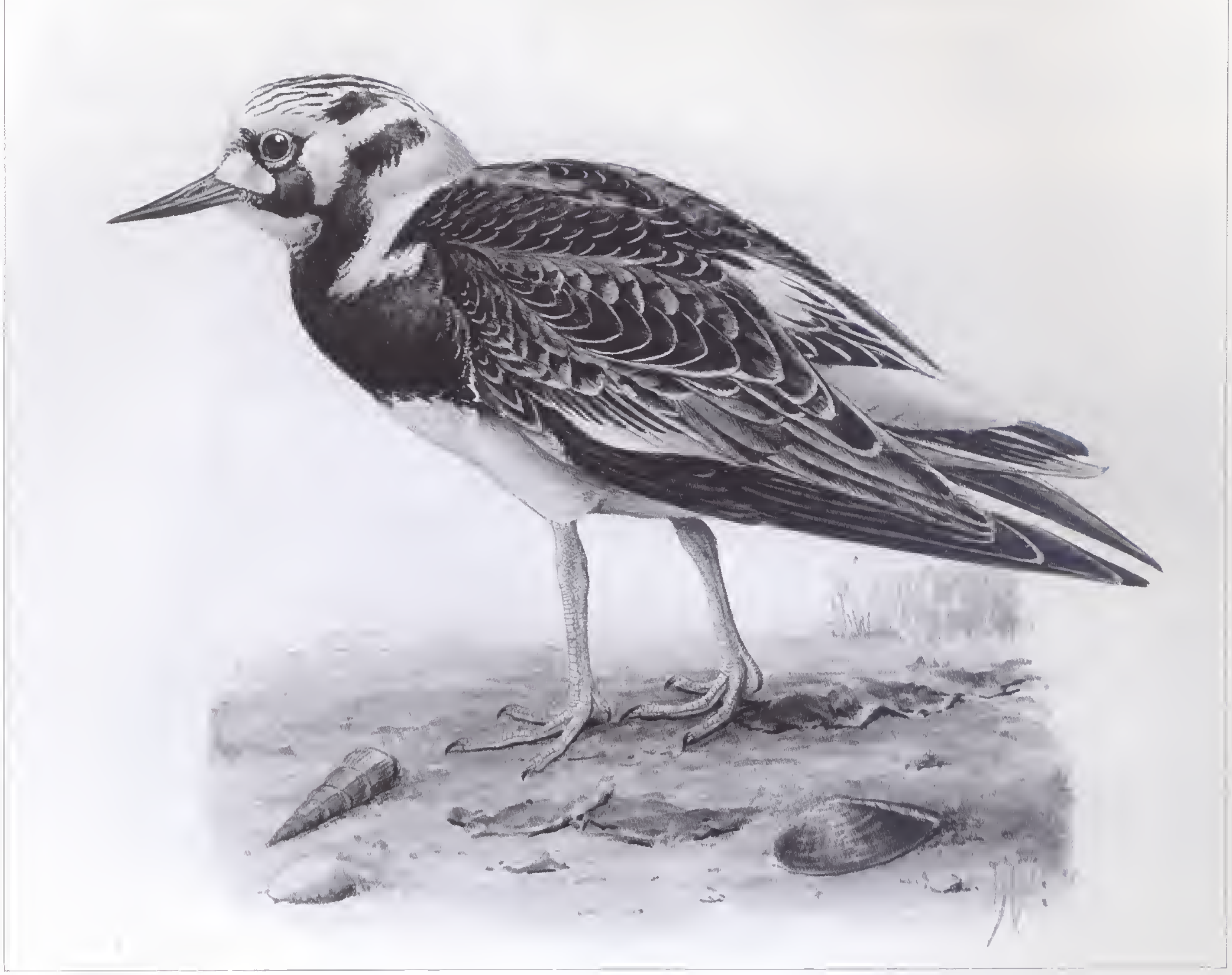
He recommended the young artist to his ornithological friends and even arranged for an exhibit of Fuertes's paintings at the 1895 meeting of the American Ornithologists' Union, where they were an immediate sensation. Fuertes received two small assignments as a result—a series of pen-and-ink drawings for the travelog, *A-Birding on a Bronco,* and four plates for a new ornithology journal, *The Osprey.*

Meanwhile, Coues was collaborating with author Mabel Osgood Wright on *Citizen Bird,* a bird guide for children. Meeting with the publisher to choose an illustrator, the ornithologist backed his protégé. And describing the outcome of the negotiations in a letter to Fuertes, Coues didn't mince words: "The publisher's choice lay between you and an artist of recognized ability and secure reputation; and I have such confidence in you that I have secured the offer for you. If this proposed arrangement can be made, and the result prove satisfactory, you will have been fairly started on the road to fame and fortune."

Fuertes produced the 108 illustrations over a period of eight months in 1896-97. The time-consuming work conflicted with his senior-year courses at Cornell. His father was displeased.

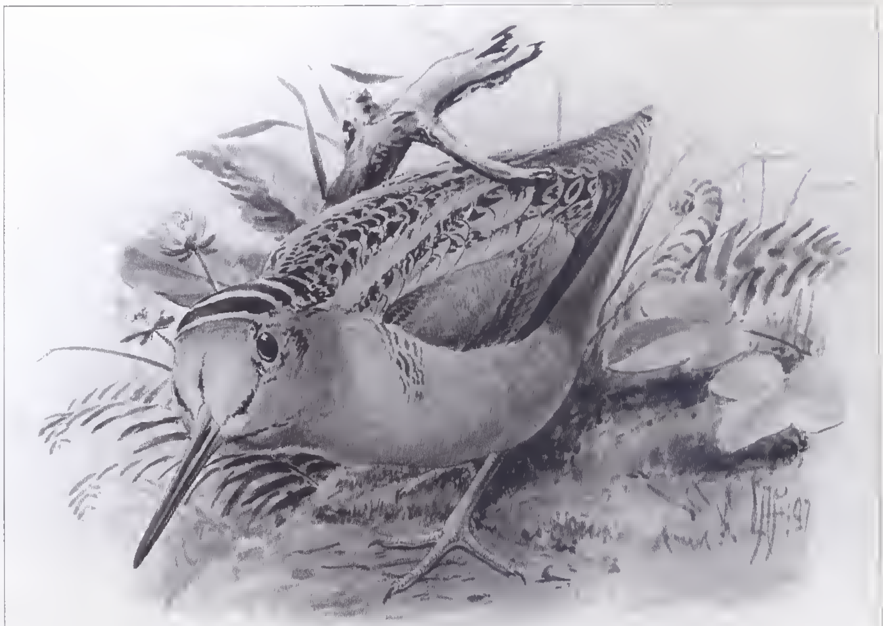
Finally *Citizen Bird* was published—and it was a success. "The book sells on sight," wrote Elliot Coues, "almost everybody that sees it wants a copy." The publisher paid Fuertes $1,000, a considerable sum in those days. Other commissions followed, and as Coues had predicted, Fuertes was "on the road to fame and fortune." ■

We are pleased to present this small sampling of the early genius of Louis Agassiz Fuertes. We invite you to visit the Lab to see the rest of the rescued Citizen Bird *illustrations, as well as the Lab's permanent Fuertes collection. Visiting hours at the Cornell Lab of Ornithology are from 9:00 A.M. to 5:00 P.M. Monday through Thursday, 9:00 A.M. to 4:00 P.M. on Fridays, and 10:00 A.M. to 4:00 P.M. on weekends and holidays. The schedule changes occasionally. To request a map with directions to the Lab, write to the Membership Department, 159 Sapsucker Woods Road, Ithaca, New York 14850.*



Ornithologist Elliot Coues gave Fuertes very explicit instructions for some of the Citizen Bird *illustrations. In one letter, he wrote, "You must do the Turnstone over again. . . . At present [it] has got its legs pulled about an inch too far. It would pass muster with ordinary drawings, but is not up to your own mark." The Ruddy Turnstone above is the successful response to this instruction.*

Coues also directed Fuertes to focus on the bird, not the background, writing, ". . . keep your accessories down *[emphasis in the original]. What we want is the bird, with least possible scenery." Today's art critics might not agree with these instructions; most say the artist's skill in placing birds in natural settings is one of his strengths. At left, "Snowy Owl"; at right, "Woodcock."*



Big Bird of the

How can the world's driest habitat support th

Namib

by Joseph B. Williams

Photographs by Rita and Charles G. Summers

world's largest bird?

The yellow orb of the noonday sun beamed down intense rays of heat as I stood on a prominent hill, peering through my binoculars at the vast gravel plain below. Before me stretched the Namib Desert of southern Africa, one of the driest places on earth. I had come to this game ranch, called Namib Rand, to study wild Ostriches.

As I scanned for signs of animal life, heat waves shimmering up from the ground distorted my view. The expansive gravel plain, perhaps 20 kilometers wide and 30 kilometers long, was bounded on both sides by mountain massifs, creating a corridor that led westward to the Namib's dune sea. Dry watercourses, or washes, dissected the plain, creating a dendritic pattern of contrasting colors. The water of infrequent rains flows down these washes, so the soils there contain more moisture than the dry gravel plains. Within the washes I could see an occasional sprig of green grass, some shrubs with green leaves, and in the largest of washes, a few widely scattered small trees. Outside the washes, the plain was sparsely covered by brown perennial grasses, lying in wait for some future rain.

As I surveyed this region of low rainfall and scanty vegetation, I felt amazed that plant-eating animals—especially large ones—could live in such an austere environment. Yet several such species do live here. I spotted a gemsbok (a cow-sized antelope) and a somewhat smaller springbok standing motionless in the shade of some small trees, and a ground squirrel scurrying from one burrow entrance to another.

Then I noticed my first group of Ostriches, the birds that our team of scientists had come to study. Unlike the mammals, these birds weren't hiding in the shade of a tree or burrow. They strutted regally across the desert plain, occasionally pecking at plants on the ground. As I watched, a

Left, Ostriches forage in the heat of midday, a time when most other desert animals take shelter in the shade.

hundred questions raced through my mind. Why don't these birds seek shelter from the sun like the other animals? Are they really as stupid as folklore seems to suggest, or have they somehow adapted to endure the desert sun? How can the largest birds in existence find enough to eat in this bleak, hostile habitat? Do they need to drink water every day, or can they get enough moisture from their food? I thought it unlikely that they could obtain water from the dead vegetation that covered the gravel plain.

As the group of Ostriches entered a small wash, I saw that all the birds had oriented themselves with their heads pointing into the sun, the feathers on their backs erect, and their wings drooped low over their large, bare thighs. Clearly this pose was a form of behavioral temperature control: The erect feathers somehow reduced heat gain from the sun, and the wings served as built-in parasols, shading exposed areas of bare skin so that any breeze would enhance convection cooling. My Ostrich education had begun.

We were hardly the first humans to contemplate these birds. They have been exploited by humans for millennia. Five-thousand-year-old Bushman cave paintings depict an Ostrich hunt, a pictorial incantation to the gods for success. At about the same time, the ancient inhabitants of Mesopotamia, to the north, were using Ostrich eggs as water vessels.

Scientists think the progenitors of Ostriches evolved nearly 50 million years ago from crane-like ancestors that lost their ability to fly—though this idea remains controversial. Modern Ostriches first appear in the fossil record less than a million years ago.

This magnificent animal is the largest living bird. Adults usually weigh between 70 and 100 kilograms, although some males weigh as much as 150 kilograms. They stand about 2.7 meters high and can run at speeds approaching 70 kilometers per hour. The sexes aren't identical: males have dark black feathers over most of the body, whereas females are a mottled gray color. Both have white tail feathers that are often soiled by dust bathing.

Once Ostriches lived throughout most of Africa, but their range has shrunk in modern times as a result of human depredation. In 1942 hungry Arabs shot the last remaining individual of a subspecies, the Syrian Ostrich. Ostrich populations in Namibia, Botswana, Kenya, and South Africa are strong and viable primarily because large game reserves protect them from humans.

Ostriches are interesting not only from a biological perspective but from an economic perspective. In the last two decades the domestic Ostrich industry has burgeoned in South Africa, Zimbabwe, Namibia, Australia, and the United States. Virtually the entire bird is used: skins are made into expensive leather goods; meat is sold in restaurants, as a low-cholesterol alternative to beef; feathers are made into dusters, and the remaining carcasses are pulverized to make animal feeds. In South Africa, the largest producer of Ostrich products, farmers rear about 180,000 Ostriches each year, bringing over $35 million in revenue to the country. In the United States a breeding pair of Ostriches sells for as much as $75,000.

Despite the Ostrich's biological and economic importance we know surprisingly little about Ostriches in their natural environment. For example, the species's natural diet has been poorly described. As a result, feeding programs for domestic birds often guess at the proper nutritional balance. Most Ostrich ranchers feed their birds dry food and water every day, but in the wild, Ostriches often travel miles from any known water source—suggesting that perhaps they don't need to drink so often.

Our team of scientists had three objectives for our Ostrich study. First, we wanted to measure how much energy and water these desert denizens use during their normal daily activities. Sec-

This oversized "mist net," left, captured Ostriches for a study of their metabolism. Above, a male Ostrich performs a "broken wing" display to distract attention from the chicks he is tending.

PHOTOGRAPH AT LEFT: JOSEPH B. WILLIAMS

ond, we wanted to determine the diet of wild desert Ostriches and explore the possibility that their foods supply enough water to meet their needs. And third, we were interested in the birds' daily activity patterns. We wanted to know how far they traveled in search of food each day.

We used a procedure called the "doubly labeled water technique" to measure how much energy and water these birds use during their daily activities. An animal is captured and injected with a special kind of water containing deuterium (a heavy isotope of hydrogen) and oxygen-18 (a heavy isotope of oxygen). This water is nontoxic and harmless to birds. Then the animal is released to the wild. As it breathes out carbon dioxide and excretes waste products, some of the labeled materials are lost from its body. Finally the animal is recaptured some days later and a blood sample is drawn. By measuring the decline in the concentration of the isotopes, we can accurately estimate the animal's energy expenditure and water intake. The beauty of this method is that the Ostrich goes about its everyday, normal activities in its natural environment while the measurement is being made. Other techniques for measuring energy use require that the animal be restrained in a laboratory.

Still, capturing such a large and wary animal presented a real challenge. With their powerful legs and feet, domestic Ostriches have injured and even killed humans. Before this research endeavor, I had worked primarily on small birds that I captured with mist nests. I had to smile as I tried to envision wrestling a 100-kilogram Ostrich out of a mist net.

A local rancher suggested that we capture Ostriches by driving alongside a running bird, placing a shepherd's crook around its neck, then slowing our vehicle. John Wayne would have loved our first efforts. Imagine driving 70 kilometers per hour over rocky desert terrain alongside an Ostrich that's running this way and that like some giant mouse avoiding a broom . . . and then imagine putting a shepherd's crook around the bird's neck. Our attempts failed miserably. It looked like our research was doomed.

The Game Capture Unit of the Namibian Department of Nature Conservation came to our rescue. The team set up long drop nets that they normally use to capture African antelopes such as gemsbok. These nets, about three meters high and one kilometer long, are affixed to poles that collapse when an animal hits the net. We used vehicles to slowly herd Ostriches down natural corridors toward the nets. As we approached a net, we increased our speed, and the birds ran into the net. We removed the entangled birds and immediately placed socks over their heads. They calmed down right away, allowing us to maneuver them into special holding crates. In all, we captured two adults, a male and female each weighing about 90 kilograms, and four subadults, each weighing about 50 kilograms. We injected these birds with doubly labeled water, attached radio transmitters to their tail feathers, weighed them, and released them.

For the next eight days we followed our radio-tagged birds over the gravel plain of the Namib. We found that they were walking 10 to 20 kilometers per day in search of food. This mobility is probably the key to their success in desert environments. Unfortunately, in African countries with exploding human populations, more and more fences are being erected in Ostrich habitat, limiting the birds' ability to search for new patches of food and causing population declines.

We also determined that Ostriches are active only during the day; at dusk they find a raised position and roost there for the night. The quest for food consumes 80 percent of an Ostrich's day; preening, dust bathing, and sitting account for only one percent. During our observation period, Ostriches did not seek the shade of trees, though we often saw small antelopes sheltering from the sun in this manner. Most of the time the Ostriches foraged in the washes, where a few green plants grew. Some of these were small succulents, plants that are about 70 percent water.

Popular belief holds that Ostriches will eat practically anything—a notion fueled by the fact that domestic birds have been known to eat razor blades, bottles, nails, and long strands of barbed wire. Our study revealed that Ostriches actually are highly selective and consume only a few species of green plants, ignoring the more abundant dead vegetation. We concluded that over evolutionary time the Ostrich has adapted to traveling long distances in search of the few green plants that nature provides in the desert.

The Ostrich digestive tract is well suited to processing these meals. The system consists of an esophagus; a two-part stomach (the proventiculus, which stores plant materials and mixes them with enzymes and acids, and the muscular gizzard, where small stones grind coarse plants into fine particles); a small intestine that absorbs nutrients; and a pair of cecae—closed chambers, each two meters long, where bacteria break up complex molecules into simpler subunits. The cecae can produce 75 percent of the energy an Ostrich needs.

To better understand the Ostrich diet, we decided to act like Ostriches. Each one of us "foraged" for five hours, collecting all the green plants that we could find—especially ones that we knew Ostriches were eating. I spent five hot hours on my hands and knees, crawling over dry washes trying to collect green plants for laboratory analysis. In the end, to my chagrin, I collected only about 100 grams of green plants—barely a snack for an adult Ostrich, which typically consumes 4,500 grams of fresh plant food each day.

We were surprised to discover that Ostriches often pluck up whole plants and swallow both shoots and roots. Eating roots isn't an option for mammalian herbivores; the clinging sand would wear down their teeth and, as a result, shorten their life span. Because Ostriches grind their food in a gizzard, not with teeth, they can use a food source that's not available to large mammals such as the gemsbok.

Our study showed that an adult Ostrich burns about 18,000 kilojoules a day; it uses 70 percent of this energy walking the long distances to patches of green vegetation. Our calculations showed that the Ostrich burns its food calories efficiently; it expends less energy per unit of body mass than many other birds. An Ostrich-sized chicken probably couldn't survive in the Namib because it would need so much food. Somehow the process of evolution has lowered the Ostrich's metabolism, reducing its need for food—a useful adaptation for a desert bird.

We also found that adult Ostriches used about 3 liters of water per day. The two adult Ostriches we captured, however, got all their water from their food or from biological oxidation within their own bodies. They did not drink during the entire eight days that we measured their water intake. We saw other adult Ostriches drinking at a water hole, so these birds do come to water, but apparently they don't need to drink every day.

Ostriches walk far each day in search of their favorite food—succulent desert plants that they eat roots and all. The meal provides all the moisture an adult ostrich needs; the male above may go for days without water, although his chicks probably need a daily drink from a desert water hole.

This explains why you can find Ostriches in the Namib 50 kilometers from any known water source. As long as adults can find succulent foods, they need to drink only infrequently. Young birds may be more dependent on drinking water than are adults. The subadults we studied did drink water during our measurement period, about three-quarters of a liter per day.

Edward Abbey once said, "There is something about the desert. There is something there which the mountains, no matter how grand and beautiful lack: which the sea, no matter how vast, does not have." For the vertebrate biologist that "something" is the array of adaptations that animals must possess to survive and reproduce in such a hostile environment. We learned much about Ostrich adaptations. They use less energy for their size than other birds, so they don't need as much food. So long as they can find succulent foods, they can go for long periods without drinking. They are highly selective in the foods that they eat, choosing green vegetation rich in protein and water. And they are highly mobile, able to travel long distances in search of food. What a marvelously adapted desert animal. ■

Joe Williams studies the ecological physiology of birds both large and small. He is an assistant professor in the Department of Zoology at Ohio State University.

Further Reading

Williams, J.B. et al. Field metabolism, water requirements, and foraging behavior of wild Ostriches in the Namib. *Ecology*, vol. 74, pp. 390-404; 1993.

A Book to Finish

Text and photographs by Robert McCracken Peck

An artist and a biologist join forces to produce the definitive series on South American birdlife

Even in the dry season, the weather is uncertain in the Ecuadorian Andes. So are the politics. After 25 years of work in South America as one of the world's preeminent neotropical ornithologists, Bob Ridgely knows about the uncertainty of both. He has dealt with hurricanes, landslides, hostile Indians, miles of red tape, and any number of tropical diseases in order to pursue his life-long love of birds. This afternoon he will add another gray hair to his prematurely silvered head, even as he is adding a new bird to the recorded avifauna of Ecuador.

It is a chilly 43 degrees Fahrenheit with a light drizzle blowing from the east. Bob is dressed in a thick hand-knitted sweater, yellow rain gear, and high-top rubber boots. We stand on the west slope of Ecuador's Andes, more than 9,000 feet above sea level. In the valley below us twists the Rio Isimanchi, and beyond that lies Peru. With hundreds of South American trips to his credit, Bob Ridgely has spent a good deal of time in Peru—and on this trip we have touched its fringes regularly while wandering back and forth across its unmarked border—but since

With two massive volumes of his epic work on South American birds yet to complete, Bob Ridgely pushes himself relentlessly. Above, he enters field notes from a long day of bird study into a laptop computer. Afterward he will probably return to the field, continuing to search for bird species well into the night.

the mid-1980s, when the Marxist "Shining Path" guerrillas began to permeate the country's remote mountain regions, he has chosen to focus his binoculars elsewhere. "I would rather not be shot," he comments matter-of-factly. "Besides, I have a book to finish."

Bob Ridgely, above left, was already working on his "magnum opus" 10 years ago, when he described the birdlife of Ecuador's Cordillera de Cutucu of southeastern Ecuador. At that time, this mountain range had not yet been explored by ornithologists. In the photograph above, taken during his 1984 expedition to the area, Ridgely and Frank Gill, chairman of the Ornithology Department at the Academy of Natural Sciences, show their exhaustion at the end of a day's survey.

The book that repeatedly draws him to the tropics and drives his 75-hour work weeks at Philadelphia's Academy of Natural Sciences is the exhaustingly ambitious, multi-volume *The Birds of South America*, which Bob is co-authoring with acclaimed bird artist Guy Tudor. It has brought us to this remote stretch of the Andes and into the nastiness of a late October storm.

For several weeks I have been traveling with Bob and some of his museum colleagues as they explore the Cordillera Las Lagunillas, a relatively unspoiled forest and paramo habitat 350 miles south of Quito, Ecuador. This is the home of the shy, nocturnal spectacled bear, the rarely-seen woolly mountain tapir, and of many unbelievably beautiful birds. Pearled Treerunners, Tawny-rumped Tyrannulets, Rainbow-bearded Thornbills, Black-tailed Trainbearers, Shining Sunbeams, Amethyst-throated Sunangels, Mountain Velvetbreasts—birds with English names as colorful as the creatures they represent—brighten the forests below us with dazzling displays of plumage and sound.

To Bob's evident satisfaction, we have just confirmed that this soggy, rocky, windswept grassland is also home to the Andean Flicker, a large, cinnamon-plumed woodpecker with yellow underwings and bold, black barring on its back. Until today, the bird had been known only from Peru south to northwestern Argentina. By finding it here, Bob has expanded the known limits of its range and added another bird to the 1,600 species Ecuadorians can claim as their own.

For 20 minutes we have been peering through successive waves of obscuring clouds to a 15-foot cliff face where the flickers have excavated a nesting hole. Now I see that Bob's attention is turned elsewhere. Hoping for another first, I follow the line of his binoculars into the valley below us. I see nothing but fog. Minutes pass. Silently the veil begins to lift and I spot the focus of his attention—a line of figures moving through the wet paramo grasses in single file. Less than 400 yards away, they march directly toward us with the precision of a military force. Each man carries an automatic weapon.

Just as I fix them in view, another cloud envelopes us in translucent mist, as though a giant film projector has finished its reel and drenched a valley-wide movie screen with a wash of imageless white. All is silent except for the whir of the wind through the knee-deep grass and the hissing patter of water droplets on my rain hood. I can see Bob 10 yards away, but only in silhouette. The other two in our party, Mark Robbins and Pancho Sornoza, are obscured by the mist.

We have been working in these mountains long enough to know that no one lives here. The closest town is a grueling 45-minute jeep ride away, up the valley. Though Shining Path guerrillas have not been reported this far north, I can think of no other possible identity for the armed men now snaking their way toward us.

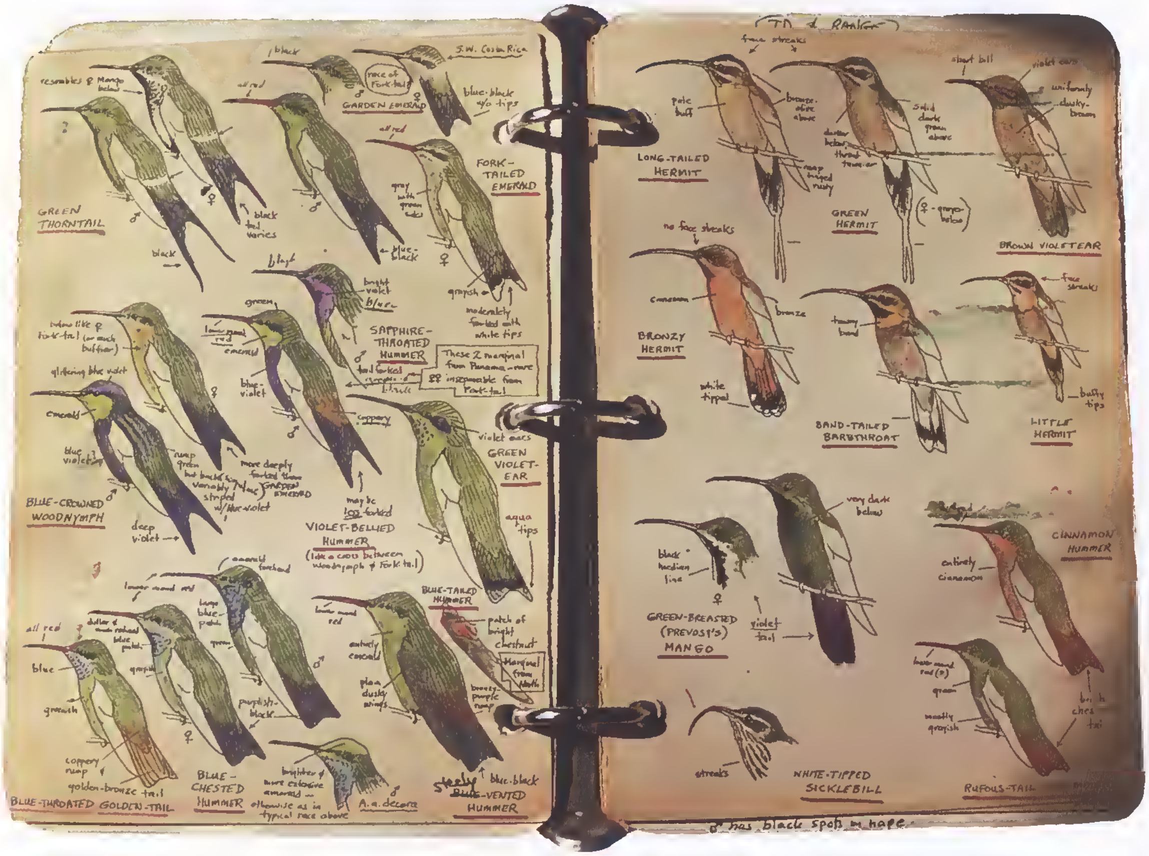
Bob and I move closer to discuss the situation. We wonder whether the men have seen our party, and if not, whether the clouds will remain long enough to allow us to slip undetected behind the concealing boulders of the mountain. We decide that the risk of sudden exposure is too great, just as the clouds blow past to reveal again the advancing line of men. They are now less than 100 yards away and closing. Bob takes a deep breath and walks past the boulders and into the open to meet them.

I remember when the hardest part of birding was just getting somewhere and trying to identify the birds," recalls Guy Tudor, Bob's stateside collaborator on *The Birds of South America.* "There were no birding tours," he says. "There weren't even field guides to a lot of the places I wanted to be." Guy's nostalgic reminiscence, delivered through a cloud of exhaled cigarette smoke, encompasses 30 years of pioneering fieldwork from Mexico to Patagonia. "Now you can get to lots of places, but there's much less to see . . . and the politics are horrendous! There are still parts of South America that I'd like to explore, but I'm not keen on slogging through Shining Path country. Bob can have that kind of travel. I feel safer here in New York."

Here in New York, for Guy, is a spacious, impeccably ordered apartment and painting studio in Queens. House Sparrows and House Finches chatter from the trees outside, and Long Island commuter trains rattle past the double-hung windows of his living room as I talk with him about birds, art, South America, and the book project that combines them all. The room is filled with prints and paintings of wildlife, whose disappearance he decries, produced by artists he admires: curassows by Al Gilbert, hummingbirds by Larry McQueen, a sheet of songbirds from Panama by John Gwynne, four small ground squirrels by famed turn-of-the-century naturalist Ernest Thompson Seton, and also paintings by Tudor himself. "I did a series of flightless bird paintings for the Darwin Centennial issue of *Life*," he explains. "I've been kicking around with birds ever since.

While Tudor's work has run the gamut from mammals to the stars, it is his bird paintings that

The paramo of the Cordillera las Lagunillas, above, also in Ecuador, is a strikingly different habitat with an entirely different avifauna. Pictured from left to right, Pancho Sornoza, Mark Robbins, and Bob Ridgely scan the wild Andean terrain for rare or unusual bird species.



Guy spent countless thousands of hours committing to paper the subtle nuances of posture, shape, and color of the birds Bob was describing in prose

have earned him universal admiration. In 1990 he was awarded a coveted MacArthur "genius" award, with an accompanying six-figure, five-year stipend. The award enabled him to focus his attention on *The Birds of South America* project for which he has now completed 83 exquisitely detailed color plates representing 1,250 species of songbirds. Volume II of the projected four-volume series was published by the University of Texas Press earlier this year.

Tudor and Ridgely began their professional collaboration a little over 12 years ago, but their friendship dates to the early 1970s when they were introduced by Gene Eisenmann of the American Museum of Natural History, to whom their book is dedicated. Bob, just back from a two-year stint in the U.S. Army in Panama, was then working on his first book, *A Guide to the Birds of Panama,* with John Gwynne. Guy was illustrating Rodolphe Meyer de Schauensee's *A Guide to the Birds of Venezuela.* "Bob and I got along well right from the start," recalls Guy. "I admired his energy and his discipline. I thought, 'Here is someone who is going to get something done.'"

The match was a good one and in 1982 *The Birds of South America* series was launched, with Bob providing information on taxonomy, behavior, voices, habitat, and ranges of the birds (complete with distribution maps based on published sources and personal observations), and Guy providing meticulously researched illustrations.

Using preserved skins from the natural history museums in Philadelphia and New York, photographs from the Academy of Natural Sciences' VIREO collection (the largest collection of bird photographs in the world), and visual references from his own extensive files, Guy spent countless thousands of hours committing to paper the subtle nuances of posture, shape, and color of the birds Bob was describing in prose. Meanwhile Bob, with support from the Academy of Natural Sciences, World Wildlife Fund U.S., the International Council for Bird Preservation, Massachusetts Audubon Society, McLean Contributionship, RARE Center for Tropical Bird Conservation, and several private donors, was traveling the length and breadth of South America gathering information on the 3,500-odd species of birds that inhabit the ornithologically richest of all continents.

The attempt to scientifically document South

When artist Guy Tudor traveled to Costa Rica in the late 1960s, he was frustrated by the lack of published information on the country's birds. His solution: he created his own field guide in a loose-leaf notebook, above left and at right. Above, Bob Ridgely explores a highland area in Ecuador's Andes, near where his group encountered armed soldiers and a new species of cotinga.

MAGPIE JAY -
BROWN JAY - w/white tail tips
BLACK CHESTED JAY - superficially similar to Brown Jay; Note violet cast on back, sharp demarkation at breast, bright blue facial marks
AZURE-HOODED JAY - dark dusky blue with azure crown outlined by thin silvery line Throat black
SILVERY-THROATED JAY - lacks azure crown. Large throat patch silvery-white.

America's vast ornithological fauna began in the late 18th and early 19th centuries with the efforts of such now-obscure naturalists as Felix de Azara (1746-1821), a Spanish cleric and military engineer who described nearly 450 birds from Paraguay and northern Argentina while he was directing border surveys in the area; Alexander von Humboldt (1769-1858), the German aristocrat who traced the Orinoco River to its headwaters and was the first European to study the flora and fauna of the Andes; and Prince Maximilian zu Wied-Neuwied (1782-1867), who started to inventory the birds of Brazil from 1815 to 1817, but is better remembered today for his extensive travels in North America.

While Bob Ridgely slogs through the rugged mountains and rainforests of South America to complete his work, artist Guy Tudor, pictured above, prefers to toil in the urban jungle of New York City. At right, a completed plate from Volume II of The Birds of South America, *depicting several species of antbirds.*

The British naturalists Alfred Russel Wallace (1823-1913) and Walter Bates (1825-1892) helped to bring the extraordinary biodiversity of the Amazon to the attention of a broader public world-wide, but it was American ornithologist Frank Chapman (1864-1945), curator of birds at the American Museum of Natural History from 1908 to 1942, who introduced the modern era of neotropical ornithology to South America.

To visually document his discoveries, Chapman enlisted the help of that era's preeminent bird artist, Louis Agassiz Fuertes (1874-1927). The birds they collected on a series of trips to Colombia in the first two decades of this century were among the thousands that Tudor and Ridgely consulted in the course of their research. Another major source of specimens for them was Melbourne A. Carriker, Jr. (1879-1965), who made many research and collecting trips to the Andes of Colombia, Bolivia, and Peru at about the same time.

Chapman, Fuertes, Carriker, and others of their generation are said by many to have worked in the golden age of neotropical ornithology, when there were still many birds to discover and the montane and rain forests were still essentially intact. In many respects, the years before World War II did constitute a golden era, but it was certainly not the last. Thanks to improved transportation, better equipment, and an increase in the number of skilled birders, neotropical ornithology has enjoyed more activity in recent years than at any time in history. As a result, a surprising number of contemporary ornithologists—including the late Ted Parker, whose legendary career was cut short by a fatal plane crash in 1993—have described more than a dozen new species of neotropical birds since *The Birds of South America* project began.

Tragically, even as the number of known bird species are reaching new highs, neotropical bird populations are plunging to dangerous lows. Before *The Birds of South America* series is completed, habitat loss in the tropics seems destined to doom some of the very species we have only recently come to know.

As I watch Bob Ridgely approach the unknown column of soldiers, I realize that on this afternoon the birds' biographer may be in more imminent danger than his subjects. Though we assumed that they had seen us, the men seem startled by Bob's emergence from the fog. Two of them raise their guns. Bob waves slowly and begins to explain who we are. Although he did not study Spanish when he attended Lawrenceville School or Princeton University (the son of a Brown University French professor, his formal training had been stacked in favor of other Romance languages), his military service in Panama and subsequent years of travel in South America have given him a more than adequate command of the language. From the snatches of conversation I overhear, it is clear that his self-taught language skills and considerable charm have defused a potentially dangerous confrontation.

The men we have encountered, it turns out, are not Shining Path guerrillas, but part of the

Ecuadorian Border Patrol, looking for would-be violators of their country's sovereignty. Gringo ornithologists, Bob convinces them, do not pose a serious threat. By the time that Mark, Pancho, and I join them on the hillside, the soldiers are smiling broadly, as relieved as we are that none of us are the Maoist revolutionaries we had imagined. We shake hands all around and part with best wishes on both sides.

When recounting the day's events to the rest of our party later, neither Bob, Mark, nor Pancho mention the armed encounter. They speak only of birds—the Andean Flicker and a new species of cotinga Mark has found in a mossy woodland far above camp.

Bob systematically enters the party's observations into a laptop computer and a number of well-worn field notebooks, then rushes off, tape player in hand, to comb the hillsides for Imperial Snipe. By 10:00 P.M. he will be calling owls to camp; by 11:00, seeking nightjars in the pallid light of a gibbous moon.

The field data that Bob and his colleagues gather on expeditions like this give his text in *The Birds of South America* tremendous value. The only previous attempt to document all of the birds of the continent in one book came in Rodolphe Meyer de Schauensee's landmark treatise of 1970, also titled *The Birds of South America.* Although based primarily on descriptions from museum specimens and previously published accounts, that book helped to catalyze much recent work in South American ornithology. Bob, Guy, and others have added significantly to the base that Meyer de Schauensee and his predecessors established, providing ecological, behavioral, vocalizational, and distributional information that earlier generations could only dream of knowing.

"There's still a lot to do," acknowledges Tudor, "and I may not live to see it finished." But with *The Birds of South America* volume II now on the shelf, they're halfway to the end and counting. ■

Illustrations by Guy Tudor. From *The Birds of South America, Volume II,* by Robert S. Ridgely and Guy Tudor. Copyright 1994 by Robert S. Ridgely and Guy Tudor. Reprinted by permission of the publisher, the University of Texas Press.

Robert McCracken Peck, Fellow of the Academy of Natural Sciences of Philadelphia, is a writer, naturalist, and historian who has participated in numerous research expeditions to South America. He is the author of A Celebration of Birds *(a biography of famed artist Louis Agassiz Fuertes),* Land of the Eagles: A Natural History of North America, *and several other books.*

Volume I and the newly released volume II of The Birds of South America, *both published by the University of Texas Press, are available from the Crow's Nest Birding Shop at the Cornell Lab of Ornithology.*

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mined. André Dhondt, the Lab's newly arrived Edwin H. Morgens Professor of Ornithology, says he's looking forward to working with the project.

"It is clear that we will soon be able to answer a variety of interesting questions with the FeederWatch data that can't be answered with any other data," says Dhondt. "For example, how does variation in the social organization of birds affect the patterns that become apparent in irruptions? In invasion areas, birds that defend territories in winter, such as nuthatches, do not become much more numerous on a single feeder, but appear at a larger number of feeders. Do finches, which feed in flocks, simply show up in larger flocks at the same feeders in invasion years? Or do they also visit more feeders? We are now thinking about how the FeederWatch data can answer such questions, in addition to tracking trends as we are already doing."

Recent evaluations of Project FeederWatch are causing some structural changes to the program. The semiannual *FeederWatch News* has recently been folded into the Lab's quarterly newsletter, *Birdscope*, to communicate more frequently with participants, make FeederWatch results accessible to more people, and entice more birders to join. And for the 1994-1995 season, the FeederWatch instruction booklets and data forms are being revised to make them easier to understand and fill out, and to make them more comprehensive.

"We're going to include tips on selecting feeders, setting up feeding stations, and understanding bird behavior," says FeederWatch coordinator Margaret Barker. "We'll suggest more studies that people can try with their feeder birds. Also, each participant's packet will include our beautiful new feeder bird identification poster, painted by Larry McQueen."

One of the biggest problems with FeederWatch, according to Ken Rosenberg, chief scientist for the Lab's Bird Population Studies, is that some participants don't realize that recording no birds at their feeders is just as important as recording lots of birds.

If you've seen the FeederWatch logo, you'll recognize its popular subject—a White-breasted Nuthatch like the one pictured above.

MARIE READ

"Some people get discouraged when they see few birds at their feeders, and they may feel like it's a waste of time to fill in the data form," says Rosenberg. "But for the scientists analyzing the data, it's just as important to know where the birds are absent as where they are common in a given winter. And taking a long-term perspective, it's safe to say that if you have few birds this year, don't be discouraged; chances are you'll have more next winter."

All the staff involved in Project FeederWatch are looking forward to many more years of data collecting and analysis. They are also looking forward to doubling or even tripling the number of participants, especially in the Midwest, the Southwest, the prairie provinces, and Alaska, where participation is still sparse.

One of the best reasons to participate in Project FeederWatch is for simple enjoyment. Says one participant from Williamsport, Pennsylvania, "Thank you for Project FeederWatch. It makes winter so much more interesting—especially for a retiree." Says another, from Chillicothe, Missouri, "I'm recovering from surgery and radiation treatment. This FeederWatch has been wonderful therapy." From Essex, Ontario: "Thank you for providing a 'method for my madness' for bird-feeder watching every winter." From Hopatcong, New Jersey: "My second-grader FeederWatchers beg to stay in for recess so they can watch the birds." And over and over participants say, "It's nice to know that my small input can help in a real scientific study."

Michael Bradstreet, executive director of LPBO, believes that FeederWatch has a long and productive future. "Tracking changes in bird populations across the geography of North America is a daunting task," says Bradstreet. "Project FeederWatch is a great example of such important work getting done because people from all walks of life, all across the continent, are willing to work together to learn more about birds. The combination of professional design, volunteer involvement, coverage through the season, rigorous analysis, and international cooperation puts the project in a league of its own.

"Besides, it's fun!" ■

Please Join Project FeederWatch

The project depends on participants' fees for sustenance: in the United States the annual cost is $14 ($12 for Lab members); in Canada the cost is $16 Canadian. U.S. participants, please send your name, address, and check to Project FeederWatch, Cornell Lab of Ornithology, P.O. Box 11, Ithaca, New York 14851-0011 or call 1-800-843-BIRD with a credit card number. Canadian participants, please send your name, address, and check to Project FeederWatch, Long Point Bird Observatory, Port Rowan, Ontario, N0E 1M0. Special note for educators: Try FeederWatch with your classes. Write to the Lab of Ornithology for our "Educator's Guide to FeederWatch."

A CAMERA FOR ALL SEASONS

Text and photographs by Tim Gallagher

Finding a camera that can stand the rigors of bird photography

Each year we receive dozens of letters from Lab members asking us to publish articles about bird photography. In response, we're starting a new column, "Picture Perfect," which will appear twice a year in these pages. To launch the column, we're presenting this excerpt from editor-in-chief Tim Gallagher's new book, Wild Bird Photography, *scheduled to be released this October by Lyons & Burford Publishers of New York.*

The first question most people ask when they decide to take up bird photography is: "What kind of equipment do I need?" So many different kinds of cameras and lenses are available, all loudly touted by company advertisements. How can I be sure I'm getting the best equipment for my purposes? Though selecting camera equipment is not easy, if you read this article and take time to analyze your own particular needs in bird photography, you should be able to narrow your search to a few equally good cameras.

Portability is the first thing to consider as you shop for a camera. Though some bird photographers take most of their pictures at home and aren't bothered by the weight and bulk of their equipment, most of us spend a lot of time trudging up and down hills and through marshes. In these situations, you'll want to use equipment that's relatively light and compact. This pretty well eliminates large- and even medium-format cameras. For a variety of reasons—comparatively low film price, acceptability by publishers, as well as the light weight of the equipment—35mm is the film size of choice with the majority of professional wildlife photographers. Another plus for this format is that most of the research and development carried out by major camera manufacturers is aimed at improving their 35mm cameras, developing better exposure meters, improved lenses, new technologies such as autofocus, and lighter, stronger camera bodies.

Of the 35mm camera types, the single-lens-reflex (SLR) is by far the best choice for bird photography. Most models accept a wide array of interchangeable lenses, from ultra wide-angle "fisheye" lenses to super telephotos. The SLR is distinctive in that the image travels through the lens, bounces off a mirror in front of the film, and up through a prism that deflects the image once more and directs it to the eye of the photographer. At the instant the shutter release is pressed, the mirror flips up, a focal-plane shutter curtain flies across, allowing light to hit the film for an instant, then the mirror snaps back into place. This unique design allows you to see the exact image that will appear in your photograph, which makes composing a picture and focusing easy and accurate.

Several companies manufacture acceptable 35mm SLR cameras. But taking a look at the company reputation, special features, available equipment, price, and the overall look and feel of a camera will point out the best choices. One thing to look at when shopping for a camera is the type of lens mount. In the past, many SLR cameras used screw-mount lenses, which were difficult and time consuming to change, and there was always the chance that you could cross-thread the lens if you rushed it, resulting in an expensive repair job. But most SLRs now use "bayonet mount" lenses. The touch of a button and a quick twist of the wrist is usually all you need to change a lens. But some bayonet mounts are better than others, so it's worth shopping around to find out what works best for you.

Most major camera brands—Nikon, Canon, Minolta, Olympus, Pentax, and others—have 35mm SLR cameras suitable for bird photography. But before buying a particular brand, look at the optional equipment available. Does the manufacturer offer an extensive line of lenses for use in a variety of situations, or do they only have a handful of optional lenses for their cameras? Remember, you're buying more than a camera, you're buying into a lens system. You want to get into a system that can grow with you as your special needs change. The fact that the majority of professional wildlife photographers use either Nikon or Canon equipment is largely because of the extensive lines of interchangeable lenses the two companies produce.

Be sure to get a camera with a built-in exposure meter. That way you won't have to carry a separate hand-held light

meter to determine the correct exposure. Automatic exposure control is also a handy feature, leaving you free to focus and compose your pictures without constantly having to adjust your aperture setting or shutter speed to compensate for changing light conditions. If you do buy a camera with automatic exposure control, make sure that the exposure can also be set manually. Some situations in nature photography can fool an automatic exposure system. Taking properly exposed pictures of birds in flight is difficult for some automatic systems. The light meter takes a reading from the brightly-lit sky in the background rather than from the dark-colored bird you're photographing, and you end up with a silhouette. In this case, it's better to take a meter reading from another object of similar color or reflective quality as the bird—the ground, some foliage, rocks—and set the exposure manually. Some cameras have "matrix" exposure metering systems that analyze diverse lighting conditions, automatically compensating for bright backgrounds and other difficult lighting situations.

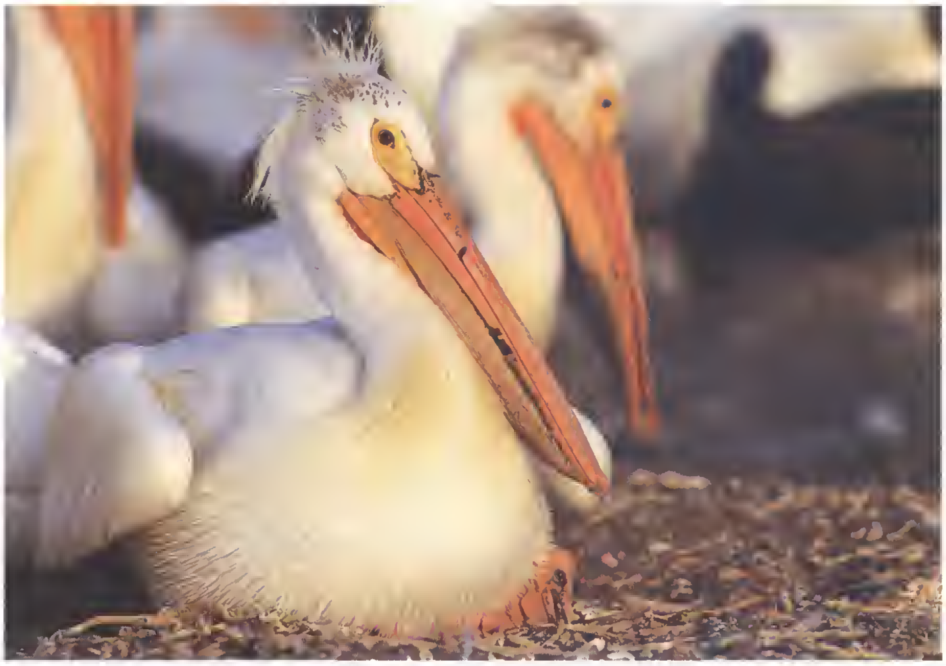
Interchangeable focusing screens are another handy feature on an SLR camera. Stock focusing screens usually have a split-image rangefinder in the center of the viewfinder. The two halves of the image move together or apart as you turn the focusing collar on your lens. When the images are perfectly aligned, your subject is in perfect focus. But these focusing devices can be a nuisance if you're using a telephoto lens. Looking through most long lenses, the split image becomes a dark spot at the center of the image. With practice, it's quicker and easier to focus by eye using a blank focusing screen. The first thing I do when I buy a new camera is to replace the stock focusing screen. I sometimes use a screen that has a grid of horizontal and vertical lines etched on it. This makes it easier to line up the horizon correctly in my pictures.

Motordrives are useful in bird photography. Although you may shoot up more film if you use one, a motordrive eliminates wasted motion and time. While photographing a restless bird, time is critical. Even if you don't need a motordrive at present, you should buy a camera that will accept an optional motordrive in case you need one in the future. Though motordrives can be noisy, they rarely scare birds away. More often, the sound of a motordrive snaps a bird to attention, causing it to pause for a second and look up—an excellent time to take a couple more photographs.

Many cameras now have built-in motordrives or autowinders. In the past, I preferred cameras with removable motordrives so that I'd have the option of advancing the film manually while photographing a particularly nervous bird. It was also nice to be able to take off the motordrive and leave it at home on those occasions when I had to pack lightly. I must say, however, that some of the latest cameras have whisper-quiet motordrives—actually more quiet than most manual advance cameras—and are very light and compact. Try out a few models at the camera store, comparing speed, efficiency, and quietness, then decide for yourself.

I'm often asked about autofocus cameras. Autofocus was something I resisted for several years, but since I bought a Nikon F4S, which has an excellent automatic focus system, I find I'm using it more and more. It's been especially useful for taking quick shots of shorebirds running up and down the beach. I've also taken some excellent pictures of flying birds using autofocus.

The final consideration in the choice of a camera is the overall durability of the product. Let's face it, any camera equipment used for photographing wildlife does get knocked around a little in the field. If you really get into this as a hobby or profession, you'll probably be slogging through marshes, climbing trees, or crawling through dense vegetation before you know it. Take a close look at the camera you intend to buy. Does it really look like it will hold up under field conditions? You know better than anyone else the kind of abuse your camera is likely to face.



Whether you're crawling through a marsh to photograph an avocet, below left, or lying in a hot blind in the middle of a pelican colony, above, you need a rugged, dependable camera.

Many cameras now are made primarily of plastic. That in itself is not necessarily a bad thing—some high-impact plastics are rugged—but I think a camera needs to at least have a metal interior framework to make it tough enough for bird photography. If you're in doubt, look at product brochures of the camera you're thinking of buying. They often list construction materials. Also try to find a product review of the camera in *Consumer Reports* or one of the many photography magazines. You can find back issues of these publications and a reference list of articles at most public libraries. If you take the time to do a little research on your own and talk to other photographers in the field, you should be able to find a camera that will fit your needs now and in the future as your skill in bird photography grows. ■

The Catbird Seat

THE WISDOM OF THE WORTHIES, PART II

by Pete Dunne

I stepped up to the counter of the Cedarville Diner and was halfway through an order for "coffee black . . ." when a voice from the back shouted, "IT'S HIM. THAT BIRD FELLAH." Before I could add ". . . to go," I found myself wedged into a corner booth with Bob Henschel, the dairyman, Phil Sayre, a farmer, and Alan Corson, the mayor—members of the town's ad hoc breakfast think tank.

Every morning at seven, Cedarville's worthies gather to discuss the ills of the world—and it's a shame world leaders don't take advantage of their privileged council. It had been two years since I'd invited the assemblage to consider the merits of letting heard-only birds count on a birder's life list. The ensuing debate (summarized in the Autumn 1992 installment of this column) went from obtuse to metaphysical—went everywhere but to a conclusion. Nobody had paid any attention when I left. I didn't expect anyone to notice that I'd returned. I was wrong.

"Where's Reverend Johns?" I inquired.

"Down in The Valley," the mayor said.

"What valley?" I asked.

"The valley where the Collared Forest-Falcon is," he replied. "The Rio Grande Valley," he added (just in case I really was as stupid as the pitch in his voice implied).

"What's he doing down there?" I asked, somewhat startled.

"He needs the bird for his North American list," the mayor explained. "Don't most people?"

"THE REVEREND JOHNS IS A BIRDER?" I screeched.

"Uh huh," Phil Sayre said, breaking in. "Except he prefers 'bird watcher.' Me and Bob and Alan there are partial to 'birder' ourselves. He get it yet?" he asked Alan.

"Heard it, ain't seen it," Alan confirmed. "Said he was going to stick there until he saw it—which brings us back to that discussion we had two years ago . . . ."

"YOU GUYS ARE *BIRDERS!*" I said, astonished. The last time we'd met, the lot of them couldn't tell a hawk from a hand saw.

"That's right," the mayor replied. "Figured we'd never find an answer to that question of yours unless we understood birding. Turns out we kind of took to it."

"Alan," Bob Henschel said, "we ain't got time to sit here jawing this morning."

"Dang, I know it . . . ten minutes max," Mayor Corson said. "Mister," he said, looking at me, "you couldn't a picked a worse morning. But there ain't no tellin' when we'll get another opportunity, so let's just get to it. The way we figure it, forcing people to see a bird to count it is bound to set up situations where birds is going to get stressed. Take Black Rails," he continued. "You're familiar with Black Rails, ain't you?"

ILLUSTRATION BY JEFF SIPPLE

I nodded dumbly.

"Well, draggin' marshes with ropes to get a glimpse of them in daylight raises hell with salt marsh nesting birds. It's en-vi-ron-mentally disruptive. And it's our opinion that ensuring the welfare of birds should be a birder's first consideration; should be . . . what was that term the reverend used?"

"A priori," Phil offered. "Know what that means?" he said, addressing me, ignoring my affirmative nod. "It means rock bottom."

"It's Kantian," I offered.

"Ain't he the guy who wrote that field guide about advanced birding?"

"No, that was another guy," I said. "Immanuel Kant was a philosopher."

"Sounds foreign. Did he keep a North American list?"

"I don't think so," I said.

"You'd think a man that ethical would have been a birder," said the mayor. "Anyway," he continued, "that's how we see it. People will want to see birds most times an' that's fine. We just don't think people should be forced to see birds when common sense says it's bad for 'em. You agree?"

I couldn't do anything but nod.

"Fine," the mayor said. "That's settled. Now, you got to excuse us 'cause we got an important meeting and then we're heading up to Pedricktown to see Ruffs. Need 'em for our year lists." Without waiting for a reply the trio reached under the booth, exhuming piles of documents with titles like: "Projected Rise in Medicare Costs." Then Phil and Bob began arguing about "Universal Coverage," and from the way they started in you could tell it was an old argument.

To get my coffee, I had to reach over a battery of raincoat-clad figures who had commandeered the counter. At the door stood a man in aviator sunglasses who alternately interrogated me and said "affirmative" into a two-way radio.

An army of state troopers stood in the street, coalescing around a woman in a blue suit who was just stepping out of a stretch limousine. Walking smartly up the steps of the diner, she paused and spoke to the man with the radio.

I was too far away to pick up the conversation, but I think I heard something about calling Bill and reminding him to change the litter for Socks. And then, though I'm not certain, I thought I heard her ask him to confirm the tides at Pedricktown. ■

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From the introduction by Arnold Small

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